

**Claims:**

1. An apparatus comprising:

a diversity combiner, to selectively modify each of two or more received wireless communication signals and generate a composite signal from at least a subset of the modified received signals; and

a combiner control agent, coupled to the combiner, to dynamically generate a control parameter for each of the received signals to control combiner modification of the signals in generating the composite signal based, at least in part, on one or more quality values generated during baseband processing of prior composite signal(s).

2. An apparatus according to claim 1, wherein the control parameters include one or more of an attenuation value and/or a phase-shift value for each of the received signals.

3. An apparatus according to claim 1, wherein the combiner is comprised of a passive all-pass filter with linear phase characteristics for each of the received signals, wherein a linear phase slope of each of the filters is independently controlled by a received control parameter.

4. An apparatus according to claim 1, wherein the combiner controller receives quality values from at least a baseband processor.

5. An apparatus according to claim 4, wherein the quality values received from the baseband processor include one or more of a signal to interference and noise ratio (SINR)

value, a cyclical redundancy check (CRC) figure, and the like derived from a demodulated representation of the composite signal.

6. An apparatus according to claim 1, wherein the combiner control agent receives  
5 radio frequency quality value(s) associated with one or more of the received signals.

7. An apparatus according to claim 6, wherein the radio frequency quality values include a received signal strength indication (RSSI).

10 8. An apparatus according to claim 1, wherein the combiner control agent generates a control parameter (K) which, when interpreted by elements of the combiner, selectively control one or more of an attenuation value (A) and a relative phase value ( $\phi$ ) of a received signal.

15 9. An apparatus according to claim 8, wherein the combiner control agent generates a control parameter (K) in accordance with  $K_n = A_n e^{(j\phi(n)r(n))}$  for at least a subset of n received signals.

20 10. An apparatus according to claim 1, wherein one or more of an attenuation value (A) and a phase value ( $\phi$ ) associated with at least a subset of the received signals are selectively modified in response to a control parameter (K) associated with such subset of signals received from the combiner control agent to generate the composite signal (R) according to  $R = A_1 e^{(j\phi(1)r(1))} + A_2 e^{(j\phi(2)r(2))} + \dots A_n e^{(j\phi(n)r(n))}$ .